

REMARKS

Responsive to the pending Office Action, Applicant hereby cancels Claims 3-5 and 8-26 to simplify issues for appeal if necessary, and requests reconsideration of remaining Claims 27-30.

Independent Claims 27 and 29 further are amended to clarify the invention being claimed, and Applicant submits these claims are in condition for allowance as discussed below.

An Information Disclosure Statement will be submitted to cite additional prior art which have come to light in the corresponding JP patent application, namely, JP 60-34695 Y and JP 63-261500 A. The pending claims are believed to patentably distinguish over these references.

As to independent Claims 27 and 29, these claims essentially define that a reference value setting means is provided within the vehicle for setting a reference value corresponding to a target traveling speed of the vehicle. Additionally, the actual speed of the vehicle is detected by a detection means which outputs a vehicle speed signal. A receiver is also provided within the vehicle that outputs a control signal upon receipt of a transmitter signal.

Essentially, a "comparison" of the reference value with the vehicle speed signal is implemented based on the control signal. As a result of this comparison, Claims 27 and 29 define that the operation signal is issued to operate the vehicle device when the actual traveling speed exceeds the target traveling speed, and in such instance, a repetitive comparison of the reference value and speed signal can be implemented. When the actual traveling speed is reduced to less than the target traveling speed, the comparison can be ended.

Thus, whenever the comparison occurs at least once or is then repeated, and the actual traveling signal exceeds target traveling speed corresponding to the reference value, the

operation signal is issued for the vehicle device so that the vehicle device is automatically operated.

While the comparison is initiated by receipt of the control signal, the safety improvement provided by the invention is accomplished through the additional features of the invention. Essentially, the invention relates to the combination of:

- A) the reference value setting means within the vehicle for setting a reference value corresponding to a target traveling speed;
- B) when the actual traveling speed exceeds the target traveling speed, the repetitive comparison can be implemented and the operation signal is automatically issued for every comparison (except for the last comparison when the actual speed is less than the target speed); and
- C) when the actual speed is less than the target speed, the comparison can be ended.

Accordingly, and particularly as to feature A (the reference value) in combination with feature B (the repetitive comparison using the reference value and the issuance of the operation signal based on the comparison), it is possible to operate the vehicle device to reach the target traveling speed from any speed, whether a higher actual speed requiring multiple comparisons or a close actual speed requiring only one comparison and the issuance of the operation signal resulting therefrom. This structure and functionality is not believed to be satisfied by Shuman as discussed hereinafter or Shuman and Tognazzini in combination.

In particular, a reference value is set on the vehicle and this reference value remains stable when implementing the comparison. Further, the repetitive comparison is implemented based on this stable reference value and continuous operation of the vehicle device can be attained. This continuous operation can be attained based solely on the receipt of the transmitter signal and issuance of the control signal, even if

there is no additional electromagnetic transmitter signals thereafter received.

Unlike Shuman which was a cruise control system required to both speed up the vehicle or slow down the vehicle and therefore requires continuous signals, Applicant's claimed invention does not speed the vehicle up, and hence the comparison can be ended whenever the actual vehicle speed is less than the target speed. Thus, safety improvement is accomplished by locally implementing the vehicle control.

Further as to Shuman, when a vehicle is controlled based upon receipt of an electromagnetic wave, it is necessary to always receive this signal. The basic premise of Shuman is that the vehicle is structured to communicate with the electromagnetic wave at all times, even if the vehicle is located "anywhere" (see lines 17-21 of Column 5. In this regard, GPS 202(1) must even be provided (see line 66 of Column 17). This therefore indicates continuous receipt of the electromagnetic wave to continuously control the Shuman vehicle.

Furthermore, Shuman requires use of a cruise control which must cope with conditions such as the interval between the vehicle in front of the instant vehicle and the changes in traveling speed of the various vehicles. To accomplish this requirement, the cruise control "continuously updates its calculation" (see line 44 of Column 22). Line 7 of Claim 22 even recites "calculating and updating a required speed". Whether actual control changes result from this process, this continuous updating and calculating must be provided in the cruise control to be able take into account the changes in the vehicle environment which environment constantly changes. In further support, Shuman Column 11, lines 59-61 further state that the cruise control application 224 (1) is provided to "maintain a desired following distance by managing vehicle speed" which thus, indicates the desired speed of the vehicle constantly changes, either faster or slower, to maintain the desired following distance.

Thus, even if a "desired" speed is set in Shuman, this desired speed is not stable but in fact is unstable since it constantly changes because of environmental changes and is continuously updated. Further, the control of the actual speed to meet a desired speed must be accomplished from an actual speed that may be either faster or slower than the desired speed and the Shuman system must be able to approach the desired speed from both directions, i.e. speeding up and slowing down, and any comparisons of the actual speed with a desired speed must be always performed regardless of whether the actual speed is above or below the target speed.

Accordingly, the disclosure in lines 39-56 of Column 22 does not disclose, teach or suggest the combination of claim features A and B described above of a set target traveling speed and a comparison where a repetitive comparison can be implemented when the actual speed exceeds the target speed. Shuman in fact teach away from this combination of features, since any desired speed calculated in the calculation process likely may be constantly changing or change at any time, such that repetitive comparison must be repeatedly performed at all times.

In this regard, lines 45-46 of Column 22 in Shuman references that the changes in the environment might require any of "speeding up, slowing down, or stopping the vehicle". Notably, if the actual speed is less than the variable desired speed, then the vehicle would be speeded up which would require that speed comparisons continue to be repeated to raise the actual speed toward the desired speed. This continuous, repetitive comparison process is an absolute requirement of this Shuman cruise control, and a requirement of the Shuman system to be able to provide control to the vehicle in a wide area under continuously changing conditions.

However, the claimed invention provides local control to the vehicle, wherein according to feature C, the comparison can be ended when the actual speed is less than the target speed. In Shuman, comparison of actual and target speeds

cannot be stopped at any time and in fact, is specifically performed when the actual speed is less than the desired speed. Hence, a comparison cannot be stopped under such conditions in Shuman, and Shuman teaches away from Applicant's claimed invention, even when considered with Tognazzini as will be discussed further herein.

As to specific recitations in the Office Action, lines 1-12 of paragraph 3 refer to various sections of Shuman and in particular, lines 38-43, Column 22 of Shuman. However, these referenced features still do not disclose all of features A, B and C of the pending claims since Shuman still requires continuous, repetitive speed comparisons to be able to both speed up and slow down the vehicle. Further, line 2 from the bottom of page 2 to line 3 of page 3 also do not disclose features A, B and C.

Next, in lines 3-7 on page 3 of the Office Action it is alleged that additional transmitter signals are not required. However, Applicant's claimed invention uses a stable reference value to implement the comparison and thus, does not require additional transmitter signals. Shuman, however, does not use a set, desired speed but continuously changes it or must be able to change at any time, such that the remainder of the cruise control system must be able to achieve a variable desired value which changes according to the various control signals it receives. While Shuman might occasionally reach the target speed before it changes, Shuman still cannot eliminate receipt of subsequent signals or avoid repetitive speed comparisons which repetitive comparisons must essentially occur nonstop. Hence, lines 38-43 of Column 22 do not teach all of features A, B and C in combination.

More particularly, Shuman does not intend and cannot simply set a reference value which remains unvaried and then run a repetitive comparison based upon this set value since it would not then teach the dynamic control which is the very purpose performed in Shuman. Shuman specifically recites that it "continuously updates its calculation" (line 44, Column 22)

which teaches away from a set desired speed, and if this was eliminated, it is not seen how the Shuman system would be able to control the complex system.

As a result of the claimed invention, a continuous operation can be obtained without additional transmitter signals. Further, the repetitive comparison can be implemented when the actual speed exceeds the target speed. When the actual speed is less, the comparison can then be ended. In Shuman, the repetitive comparison may not optionally be performed when the actual speed exceeds the target speed, but must be performed, and the repetitive comparison must be performed even when the actual speed is less than the target speed and cannot be ended at any time.

Therefore, as can be seen, Shuman does not disclose the features A and B wherein continuous operation by operation signals may be achieved using a reference value for a repetitive comparison which is set on the vehicle and is not varied or updated. Shuman further does not disclose feature C where the comparison can be ended once the actual speed is less than the target speed corresponding to the set reference value.

As to Tognazzini, it is alleged in "paragraph 4" on page 5 of the Office Action that where there is no input change except for some input of Tognazzini, Shuman would operate the same. However, Shuman specifically requires "continuously updating its calculations, and it is the very purpose of the cruise control in Shuman to control the vehicle in response to changes in ambient obstacles and so forth which are always monitored and reacted to. Shuman does not implement a single comparison in the cruise control based on a stable set reference value much less a repetitive comparison based on this value. According to Shuman, it is indispensable to update the value even in the case of no input change.

Additionally, as to the input of Tognazzini, Shuman teaches that data is used that is adaptable to calculation by a computer as shown in Fig. 5. This is supported by the

recitation in line 26, Column 22. If the warning of Tognazzini was used as an invaried input, it is noted that it would only be "warning information" comprising a speed and an instruction and not data inputed into a calculation for the speed calculation process.

Further, continuous receiving of data in Shuman is performed and necessary and not dispensible since normal operations and functions of Shuman would not otherwise be performed. The current rejection requires that many of the features and the very essence of Shuman be stripped out so that the remnants of Shuman could be combined somehow with Tognazzini to teach the claimed invention. This combination is so contrary to the very teachings and essence of Shuman as to require hindsight reasoning to determine what features should be stripped out and what features would be used to form the combination.

Therefore, in further detail as to Tognazzini, the "warning information" that Tognazzini might provided would include instructional information associated with a speed. This is inappropriate as data used directly for automatic calculation in the speed calculation process of Shuman. Further, Shuman does not teach extracting usable data from warning information that would then be used in a calculation performed by a computer. Hence even if combined, Shuman and Tognazzini do not teach the claimed invention.

Even if the warning information of Tognazzini might be usable as data for a computer calculation, this would still be used only for continuously updating the Shuman calculation. Further, if the warning information could not be received, then normal operation of Shuman would not be attained which requires continuous updating of the calculation to take into account the variation in ambient obstacles that are always monitored.

Further, Tognazzini teaches setting a desired vehicle speed on the side of the road and only transmits information to a vehicle, but does not teach setting a desired speed on

the inside of the vehicle, and hence, does not cure the deficiencies of Shuman. Neither Shuman nor Tognazzini disclose, teach or suggest setting a desired vehicle speed stably on a vehicle and running repetitive comparisons against this set, reference speed.

Thus, even if Tognazzini and Shuman might be combined, the basic comparison is still the same Shuman system of comparing a desired speed and current speed by continuously updating the calculation to take into account the changing environment. Accordingly as to a desired vehicle speed used in a comparison, Tognazzini (where the desired speed is determined on the roadside) and Shuman (where a desired speed is not set on the vehicle) do not disclose the present invention where a reference value used in a repetitive comparison is set inside the vehicle.

Further, Tognazzini is still believe to require multiple transmitter signals to operate, while the present invention only requires the initial transmission. Hence, the claimed invention still differs.

Such a system which requires continuous speed calculations also would be complex since it would require multiple transmitters to avoid jamming or interference and ensure continuous data transmission to the vehicles on the road. In the present invention, however, the set vehicle speed allows for the transmission to be received and acted on, and if the signal is lost, the claimed system still operates. As such, the "repetitive comparison" may still be implemented, and the operation signals issued until the target traveling speed is reached. The claimed invention therefore provides a reduced complexity system to provide the increased vehicle safety.

In conclusion, Shuman and Tognazzini still do not disclose features A and B, and do not disclose a set reference value or providing the ability to operate in the absence of continuous transmitter signals. There is a distinct difference between the applied art and the claimed invention

which provides this capability of continuing to operate even in the absence of subsequent electromagnetic waves. Further, the implementation of the repetitive comparison is limited to the case where the actual speed "exceeds" the target speed.

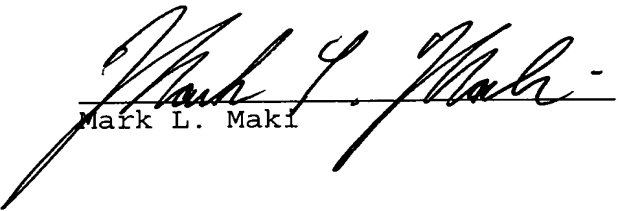
Still further as to the adaptive cruise control application of Shuman, the distance may also be set (see lines 20-23 of Column 17). Applicant submits it would be impossible to set both a distance and a set desired speed, which is the final object on the vehicle, and hence Shuman would not incorporate a set desired speed into this system for use in repetitive comparing.

Lastly as to paragraph 6 on page 6 of the Office Action, it is possible to implement comparison again upon re-receiving the transmission but if the actual speed is less than the target speed, then the comparison can be ended. Under Shuman and Tognazzini, such a comparison cannot be ended and thus, the claim language is not satisfied even under the possibility of retransmission of the transmitter signal.

On the other hand, Shuman must be able to speed up when the actual speed is less than the desired speed, such that multiple transmissions and comparisons are required in Shuman regardless of the actual speed. Tognazzini does not cure this deficiency.

Based on the foregoing, all of Claims 27-30 are believed allowable.

Respectfully submitted,


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